

Claims

1. A method for cultivation of hair inductive cells, comprising the step of culturing
5 the hair inductive cells in a culture medium comprising a medium conditioned by conditioning cells, in which the conditioning cells are derived from non-epidermal tissue.
2. The method of claim 1, in which the tissue is non-ectodermal.
- 10 3. The method of either claim 1 or claim 2, in which the tissue is of mesodermal origin.
4. The method of claim 3, in which the conditioning cells are prostate epithelial cells.
- 15 5. The method of claim 3, in which the conditioning cells are human dermal fibroblasts.
6. The method of either claim 1 or claim 2, in which the tissue is of endodermal origin.
- 20 7. The method of any of the preceding claims, in which the hair inductive potential of the hair inductive cells is maintained.
8. The method of any of the preceding claims, in which the culture medium consists
25 essentially of the conditioned medium.
9. The method of any of the preceding claims, in which the culture medium comprises conditioning cells derived from the non-epidermal tissue.
- 30 10. The method of any of the preceding claims, in which the hair inductive cells are dermal papilla (DP) cells and/or dermal sheath (DS) cells.

11. The method according any preceding claim, in which the conditioned medium is obtained using a cell line (for example, an established cell line).

5 12. The method according to claim 11, in which the cell line is derived from a donor that has been screened and tested for risk factors associated with transplantation.

13. The method of any of the preceding claims, in which the culture medium is free of recombinant genes and/or recombinant products thereof.

10 14. The method of any of the preceding claims, in which the culture medium is free of viral vectors.

15 15. The method of any of the preceding claims, in which the conditioned medium is frozen prior to use.

16. The method of any of the preceding claims, in which the conditioned medium has a serum-free component with a total protein content above 10 µg/ml, for example above 100 µg/ml or above 1 mg/ml.

20 17. The method of any of the preceding claims, in which the conditioned medium is concentrated (for example, by ultrafiltration) prior to use.

25 18. The method of any of the preceding claims, further comprising the step of subculturing the hair inductive cells in the culture medium for three or more passages, for example seven or more passages.

19. The method of any of the preceding claims, further comprising the step of harvesting or isolating cultured or subcultured hair inductive cells.

30 20. The method of any of the preceding claims, in which the hair inductive cells are

allogeneic to the non-epidermal tissue.

21. The method of any of the preceding claims, in which the hair inductive cells are autologous to the non-epidermal tissue.

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22. A method of long term cultivation of dermal papilla (DP) cells and/or dermal sheath (DS) cells of a mammalian species, the method comprising the steps of culturing and sub-culturing the DP and/or DS cells in a cell culture medium which consists essentially of, or is supplemented with, a medium conditioned by one or more mammalian
10 cells derived from a non-epidermal tissue (for example, non-ectodermal tissue such as mesodermal tissue and/or endodermal tissue), thereby proliferating the DP and/or DS cells while preserving their hair inductive potential.

23. A method of providing and maintaining dermal papilla (DP) and/or dermal sheath
15 (DS) cells for transplantation, the method comprising the steps of obtaining a DP and/or DS cell from a subject and culturing the DP and/or DS cell under conditions described in any of claims 1 to 22.

24. Cultured hair inductive cells, for example DP cells and/or DS cells, obtainable
20 using the method of any of claims 1 to 23.

25. Use of the cultured hair inductive cells, for example DP cells and/or DS cells, of claim 23 for the treatment (for example, cosmetic treatment) of male pattern baldness.

25 26. Use of the cultured hair inductive cells, for example DP cells and/or DS cells, of claim 23 in the production of *in vitro* skin equivalents.

27. A composition comprising hair inductive cells and a culture medium comprising a medium conditioned by conditioning cells derived from non-epidermal tissue (for
30 example, non-ectodermal tissue such as mesodermal tissue and/or endodermal tissue).

28. A culture medium for cultivation of hair inductive cells, in which the culture medium comprises a medium conditioned by non-epidermal cells (for example, mesoderm-derived cells such as prostate epithelial cells and/or endoderm-derived cells) and is capable of maintaining hair inductive potential of the hair inductive cells.

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